



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/074,422 | 02/12/2002 | Min-Goo Kim | 678-806(P10161) | 6996 |

28249 7590 01/31/2005
DILWORTH & BARRESE, LLP
333 EARLE OVINGTON BLVD.
UNIONDALE, NY 11553

| |
|----------|
| EXAMINER |
|----------|

TORRES, JOSEPH D

| | |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

2133

DATE MAILED: 01/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|-----------------------------------|--|
| Office Action Summary | Application No. 10/074,422 | Applicant(s) KIM ET AL. | |
| | Examiner Joseph D. Torres | Art Unit 2133 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 December 2004.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
4a) Of the above claim(s) 1-8 and 14-16 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 9-13 and 17-21 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 12 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>11/12/02, 5/5/03</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group II, i.e., Claims 9-13 and 17-21, in the reply filed on 10/12/2004 is acknowledged.

Claims 1-8 and 14-16 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected inventions, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 10/12/2004.

Information Disclosure Statement

2. The foreign French patent in the information disclosure statement filed 05/05/2003 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because no English translation of at least the abstract was provided. It has been placed in the application file, but the information referred to therein has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609 ¶ C(1).

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: '301', '302', '303', '304', '305', '306', '313', '314', '316', '323', '324', '326', '333', '334', '343' and '344'. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. A definition of "complementary code" critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. A definition of a "perfect complementary code" critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. A definition of "Quasi-Complementary Turbo Code (QCTC)" critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re*

Art Unit: 2133

Mayhew, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). On page 5, lines 19-23, a “Quasi-Complementary Turbo Code” is defined in terms of a “complementary code” and a “perfect complementary code” which are not defined in the specification.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 9-13 and 17-21 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. A definition of “complementary code” critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. A definition of a “perfect complementary code” critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. A definition of “Quasi-Complementary Turbo Code (QCTC)” critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). On page 5, lines 19-23, a “Quasi-Complementary Turbo Code” is defined in terms of a “complementary code” and a “perfect complementary code” which are not defined in the specification.

Claims 10 and 18 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. A definition for “PBRO (Partial Bit Reversal Order)

Art Unit: 2133

interleaving” critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). Nowhere, in the specification, does the Applicant define “PBRO (Partial Bit Reversal Order) interleaving”.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 9-13 and 17-21 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

Claim 9 recites, “a QCTC generator for generating a sub-code of a QCTC”. The omitted structural cooperative relationships are: the relationship between “a QCTC generator” and “a QCTC”. The omitted structural cooperative relationships are: the relationship between “a sub-code of a QCTC” and “a QCTC”.

Claim 17 recites, “generating a sub-code of a QCTC”. The omitted structural cooperative relationships are: the relationship between “a sub-code of a QCTC” and “a QCTC”.

Claim 12 recites, “a symbol repeater for repeating the serially concatenated symbol sequence”. The omitted structural cooperative relationships are: the relationship between the “symbol repeater” and the “QCTC generator”.

Art Unit: 2133

Claims 12 and 20 recite, "repeating the serially concatenated symbol sequence". The omitted structural cooperative relationships are: the relationship between the repeated "serially concatenated symbol sequence" and the recursively selected "serially concatenated symbol sequence".

Claim 13 recites, "a symbol selector for generating the sub-code by selecting the predetermined number of symbols from the serially concatenated symbol sequence at the given starting position according to the given code rate". The omitted structural cooperative relationships are: the relationship between the "symbol selector" and the "QCTC generator".

Claims 9-13 and 17-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 9 and 17 recite, "recursively selecting a predetermined number of symbols from the serially concatenated symbol sequence at a given starting position according to the code rate" [Emphasis Added]. In particular it is not clear how "a given starting position" relates to the "serially concatenated symbol sequence" in such a manner that a predetermined number of symbols can be recursively selected from a "serially concatenated symbol sequence at a given starting position" [Emphasis Added] since a starting position is generally only one symbol; hence the serially concatenated symbol sequence comprising the "given starting position" only comprises one symbol, not a

“predetermined number of symbols”. In addition, it is not clear what “according to the code rate” refers to since all error correction codes have a code rate.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 9-12 and 17-20 rejected under 35 U.S.C. 102(e) as being anticipated by Tong; Wen et al. (US 6744744 B1, hereafter referred to as Tong).

35 U.S.C. 102(e) rejection of claims 9, 10, 17 and 18.

Tong teaches a turbo encoder having a plurality of constituent encoders, for generating an information symbol sequence and a plurality of parity symbol sequences by encoding the information symbol sequence, each constituent encoder for generating at least one parity symbol sequence corresponding to at least one parity symbol sequence from another constituent encoder (Turbo Coder 909 in Figure 5 of Tong has a plurality of constituent encoders, for generating an information symbol sequence S and a plurality of parity symbol sequences, P1 and P2, by encoding the information symbol sequence, each constituent encoder for generating at least one parity symbol sequence

Art Unit: 2133

corresponding to at least one parity symbol sequence from another constituent encoder); an interleaver for individually interleaving the information symbol sequence and the parity symbol sequences (Interleaver 93 in Figure 5 of Tong teaches individually interleaving the information symbol sequence and the parity symbol sequences); a multiplexer for generating a new parity symbol sequence by multiplexing the interleaved symbols of the corresponding parity symbol sequences; a symbol concatenator for serially concatenating the interleaved information symbol sequence and the new parity symbol sequence (Selector 97 in Figure 5 of Tong is a multiplexer and symbol concatenator for generating a new parity symbol sequence by multiplexing the interleaved symbols of the corresponding parity symbol sequences and producing a serially concatenated output; Note: col. 10, lines 50-51 in tong explicitly teach that puncturing can be applied as taught in the previous text of the specification and col. 5, lines 30-36 of Tong teach that puncturing is optional so that in the case of no puncturing, channel interleaved parity is submitted directly to multiplexer and symbol concatenator Selector 97 in Figure 5; Since the puncturer 95 is adaptive and capable of being disabled, the device of Figure 5 is inherently capable of use without puncturing; See, e.g., *In re Schreiber*, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997) and *In re Swinehart*, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971).); and a QCTC generator for generating a sub-code of a QCTC with a given code rate by recursively selecting a predetermined number of symbols from the serially concatenated symbol sequence at a given starting position according to the code rate (Note: the Merriam-Webster Collegiate Dictionary defines recursively as relating to a

Art Unit: 2133

procedure that can be carried out indefinitely and repeating is a process for selecting symbols for repetition that can be carried out indefinitely; hence the repetition generator 96 in figure 5 of tong is a QCTC generator for generating a sub-code of a QCTC with a given code rate by recursively selecting a predetermined number of symbols from the serially concatenated symbol sequence at a given starting position according to the code rate).

35 U.S.C. 102(e) rejection of claims 11 and 19.

The starting position for a symbol to be transmitted is inherently a symbol following the last symbol selected for the previous transmission.

35 U.S.C. 102(e) rejection of claims 12 and 20.

Figure 5 is implementable in the 3GPP mode of Figure 1 replacing 22-26 in Figure 1 (col. 10, lines 19-59 in tong). Repeater 96 in Figure 5 is a symbol repeater for repeating the serially concatenated symbol sequence. Service Multiplexer 10 in Figure 1 is a symbol selector for generating the sub-code by selecting the predetermined number of symbols from the repeated symbol sequence according to the given code rate.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

Art Unit: 2133

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 13 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tong; Wen et al. (US 6744744 B1, hereafter referred to as Tong) in view of Azaren; Daniel J. et al. (US 5357249 A, hereafter referred to as Azaren).

35 U.S.C. 103(a) rejection of claim s 13 and 21.

Tong substantially teaches the claimed invention described in claims 1-12 and 17-20 (as rejected above). In addition Tong teaches Service Multiplexer 10 in Figure 1 is a symbol selector for generating the sub-code by selecting the predetermined number of symbols from the serially concatenated symbol sequence at the given starting position according to the given code rate.

However Tong does not explicitly teach the specific use of a circular buffer.

Azaren, in an analogous art, teaches use of a circular buffer (claim 5 in Azaren).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Tong with the teachings of Azaren by including use of a circular buffer. This modification would have been obvious to one of ordinary skill in the

Art Unit: 2133

art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of a circular buffer would have provided the opportunity to convert parallel bit symbols to serial bit symbols (claim 5 in Azaren).

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D. Torres whose telephone number is (571) 272-3829. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Joseph D. Torres, PhD
Primary Examiner
Art Unit 2133

